

IN THE CLAIMS:

1. An apparatus for generating structural data of a structure comprising:

A1 a scanning laser range finder which provides up to 125,000 discrete data points every second that produces reflectance data of the structure;

a memory which stores the reflectance data; and

means for determining desired spatial relationships of the structure from the reflectance data.

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8. A method for generating structural data of a structure comprising the steps:

A2 producing reflectance data of the structure with a scanning laser range finder which provides up to 125,000 discrete data points every second;

storing the reflectance data in a memory; and

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determining desired spatial relationships of the structure from the reflectance data.

Please add the following claims.

14. A method for generating structural data of a structure comprising the steps
of:

loading a reflectance image into an image window;

selecting a first point of the structure in the image;

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selecting a second point on the structure;

selecting a third point of the structure;

extracting straight edges for the first point, second point and third point;

constructing a plane so as to be perpendicular to an average of directions of the
straight edges' lines;

intersecting the plane in turn with each of the lines to determine three control points; and

computing dimensions for appropriate pairs for measuring distances between discrete points on the structure.

15. A method as described in Claim 14 wherein the constructing step includes the step of constructing a plane so as to be perpendicular to a weighted average of directions of the straight edges' lines.

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16. A method as described in Claim 15 including the step of generating queries into a data set of the reflectance image.

17. A method as described in Claim 16 wherein the selecting a first point step includes the step of selecting the first point on an exterior face near a first edge of the structure in the image as represented by a first pixel in the image.

18. A method as described in Claim 17 wherein the generating queries step includes the step of generating queries into the data set of the reflectance image by interacting with a set of icons and windowing commands.

19. A method as described in Claim 18 wherein the extracting step includes the step of checking that the straight edges are essentially parallel.

20. A method as described in Claim 19 wherein the selecting the second point step includes the step of selecting the second point on the face near the second edge of opposite the first edge.

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21. A method as described in Claim 20 wherein the selecting a second point includes the step of selecting a second point at a same longitudinal position as the first point.

22. A method as described in Claim 21 wherein the selecting the third point includes the step of selecting the third point on the structure on an opposite side of the exterior face of the structure near a third edge in the interior of the structure.
